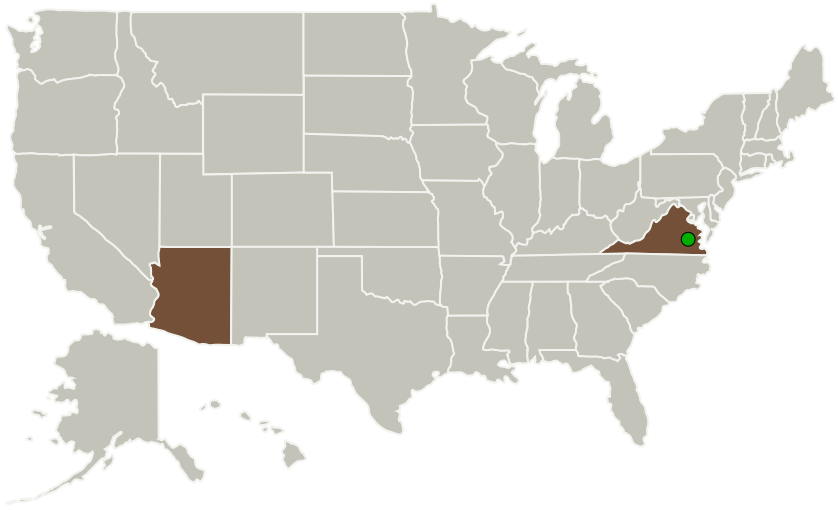
Frequency-Locked Single-Frequency Fiber Laser at 2 Micron, Phase II

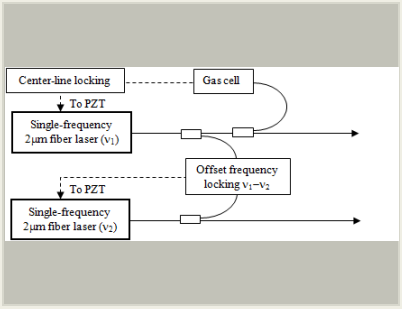
Completed Technology Project (2012 - 2014)

Project Introduction

Frequency-locked single-frequency 2 micron fiber laser is proposed to be used for airborne/spaceborne coherent lidar measurements, i.e., Active Sensing of CO2 Emissions over Nights, Days, and Seasons. The laser is based on our proprietary fiber technology and extensive experience in fiber laser development, which features a compact, highly stable, frequency-stabilized light source. Advanced frequency-locking schemes for both center-line frequency-locking and offset-frequency locking is developed in the laser source to address the bandwidth issue associated with airborne and space-borne coherent lidar measurements. Important key concepts in the proposed laser have been successfully demonstrated in the Phase I effort. This Phase II program will focus on the development of prototype units of two frequency-locked lasers at a specific wavelength of NASA interest. The prototype units will be delivered to NASA Langley Research Center at the end of this Phase II program for evaluation test.

Primary U.S. Work Locations and Key Partners





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Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
AdValue Photonics, Inc.	Lead Organization	Industry Small Disadvantaged Business (SDB)	Tucson, Arizona
Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia

Primary U.S. Work Locations	
Arizona	Virginia

Project Transitions

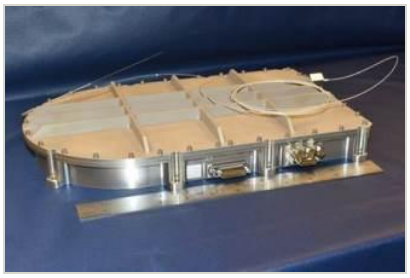
April 2012: Project Start

May 2014: Closed out

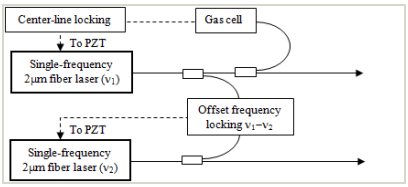
Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/140491)*

Images



Final Summary Chart Image
Frequency-Locked Single-Frequency Fiber Laser at 2 Micron, Phase II Project Image *(https://techport.nasa.gov/image/134301)*



Project Image
Frequency-Locked Single-Frequency Fiber Laser at 2 Micron *(https://techport.nasa.gov/image/131006)*

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
AdValue Photonics, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Jihong Geng

Co-Investigator:
Jihong Geng

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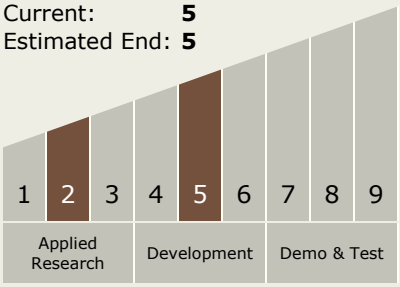
Completed Technology Project (2012 - 2014)

Technology Maturity (TRL)

Start: **2**
Current: **5**
Estimated End: **5**



Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.5 Lasers

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System